

IN THE CLAIMS:

Please amend claim 218 as follows.

Please cancel claim 237 without prejudice.

1-195 cancelled

196. (withdrawn) A method, comprising:

forming first and second sacrificial layers with hinges formed in a hinge layer on one of the first and second sacrificial layers and with mirror plates formed in a mirror plate layer on the other of the first and second sacrificial layers;

wherein the mirror plates are formed with a gap between adjacent mirror plates of from 0.15 to 0.5 micrometers;

wherein one of the first and second sacrificial layers is between the mirror plate layer and hinge layer and has a thickness of from 0.15 to 1.5 micrometers;

forming a hinge support on the second sacrificial layer for each mirror plate for supporting the mirror plate; and

removing at least a portion of one or both of the first and the second sacrificial layers using a spontaneous vapor phase chemical etchant.

197. (withdrawn) The method of claim 196, wherein step of forming the array of mirror plates on the first sacrificial layer further comprises: forming the array of mirror plates on the first sacrificial layer such that a center-to-center distance between adjacent mirror plates is from 4.38 to 10.16 micrometers.

198. (withdrawn) The method of claim 196, wherein the step of removing the first and second sacrificial layers using the spontaneous vapor phase chemical etchant further comprises: removing the first sacrificial layer using the spontaneous vapor phase chemical etchant

ATTORNEY DOCKET NUMBER P92-US

via the gap between adjacent mirror plates.

199. (withdrawn) The method of claim 196, wherein the gap is from 0.15 to 0.25 micrometers.

200. (withdrawn) The method of claim 196, wherein the gap is from 0.25 to 0.5 micrometers.

201. (withdrawn) The method of claim 196, wherein the thickness of the second sacrificial layer is from 0.5 to 1.5 micrometers.

202 (withdrawn) The method of claim 196, wherein the step of forming the hinge support on the second sacrificial layer for each mirror plate further comprises:

forming a hinge for the mirror plate such that, after removing the first and second sacrificial layer, a) the mirror plate can rotate relative to the substrate along a rotation axis that is parallel to but offset from a diagonal of the mirror plate when viewed from the top of the mirror plate; and b) the mirror plate can rotate to an angle at least 14 degrees relative to the substrate; and

wherein the step of forming the array of mirror plates on the first sacrificial layer further comprises:

forming the array of mirror plates on the first sacrificial layer such that adjacent mirror plates have a gap from 0.15 to 0.5 micrometers therebetween.

203. (withdrawn) The method of claim 196, wherein the step of forming a hinge support on the second sacrificial layer for each mirror plate further comprises:

forming a hinge for the mirror plate such that, after removing the first and second sacrificial layer, the mirror plate can rotate above the substrate to a rotation angle at least 14 degrees relative to the substrate.

204. (withdrawn) The method of claim 196, further comprising:
forming an electrode for each mirror plate; and
disposing the electrode proximate to the mirror plate for electrostatically deflecting the mirror plate.
205. (withdrawn) The method of claim 196, wherein the substrate is glass or quartz that is visible light transmissive.
206. (withdrawn) The method of claim 204, further comprising:
depositing an anti-reflection film on a surface of the substrate.
207. (withdrawn) The method of claim 204, further comprising:
depositing a light absorbing frame around an edge of the substrate.
208. (withdrawn) The method of claim 196, wherein the step of removing the first and second sacrificial layer further comprises:
monitoring an endpoint of the sacrificial layer being removed using a residual gas analyzer.
209. (withdrawn) The method of claim 196, wherein the first sacrificial layer or the second sacrificial layer comprises amorphous silicon.
210. (withdrawn) The method of claim 196, wherein the spontaneous vapor phase etchant is an interhalogen.
211. (withdrawn) The method of claim 196, wherein the spontaneous vapor phase etchant is HF.
212. (withdrawn) The method of claim 196, wherein the spontaneous vapor phase etchant is

a noble gas halide.

213. (withdrawn) The method of claim 212, wherein the noble gas halide comprises xenon difluoride.

214. (withdrawn) The method of claim 210, wherein the interhalogen comprises bromine trichloride or bromine trifluoride.

215. (withdrawn) The method of claim 196, wherein a diluent is mixed with the vapor phase etchant during removing the first and second sacrificial layer.

216. (withdrawn) The method of claim 215, wherein the diluent is selected from N₂, He, Ar, Kr and Xe.

217. (withdrawn) The method of claim 215, wherein the diluent is selected from N₂ and He.

218. (currently amended) A spatial light modulator, comprising: an array of movable mirror plates formed on a substrate for selectively reflecting a light beam incident on the mirror plates, wherein adjacent mirror plates have a gap from 0.15 to 0.5 micrometers when the adjacent mirror plates are parallel to the substrate[.]; wherein each mirror plate has an area; and wherein a ratio of a summation of all areas of the mirror plates to an area of the substrate is 90 percent or more.

219. (previously presented) The spatial light modulator of claim 218, further comprising:
a hinge that is attached to each mirror plate such that the mirror plate can rotate relative to the substrate, wherein the hinge and the mirror plate are spaced apart from 0.5 to 1.5 micrometers.

220. (previously presented) The spatial light modulator of claim 218, wherein the adjacent mirror plates have a center-to-center distance from 4.28 to 10.16 micrometers.

221. (previously presented) The spatial light modulator of claim 218, wherein the array of mirror plates comprises at least 1280 mirror plates along a length of the mirror plate array.

222. (previously presented) The spatial light modulator of claim 218, wherein the array of mirror plates comprises at least 1400 mirror plates along a length of the mirror plate array.

223. (previously presented) The spatial light modulator of claim 218, wherein the array of mirror plates comprises at least 1600 mirror plates along a length of the mirror plate array.

224. (previously presented) The spatial light modulator of claim 218, wherein the array of mirror plates comprises at least 1920 mirror plates along a length of the mirror plate array.

225. (previously presented) The spatial light modulator of claim 218, wherein the adjacent mirror plates has a gap of 0.5 micrometers or less therebetween when the adjacent mirror plates are parallel to the substrate.

226. (previously presented) The spatial light modulator of claim 219, wherein a distance between the hinge and the mirror plate is from 0.5 to 0.8 micrometers.

227. (previously presented) The spatial light modulator of claim 219, wherein a distance between the hinge and the mirror plate is from 0.8 to 1.25 micrometers.

228. (previously presented) The spatial light modulator of claim 219, wherein a distance between the hinge and the mirror plate is from 1.25 to 1.5 micrometers.

229. (previously presented) The spatial light modulator of claim 220, wherein the center-to-center distance of adjacent mirror plates is from 6.23 to 9.34 micrometers.

230. (previously presented) The spatial light modulator of claim 220, wherein the center-to-center distance of adjacent mirror plates is from 4.38 to 6.57 micrometers.

231 (previously presented) The spatial light modulator of claim 220, wherein the center-to-center distance of adjacent mirror plates is from 4.38 to 9.34 micrometers.

232. (previously presented) The spatial light modulator of claim 218, further comprising: a hinge attached to the mirror plate such that the mirror plate can rotate relative to the substrate along a rotation axis that is parallel to but offset from a diagonal of the mirror plate when viewed from the top of the mirror plate; wherein the mirror plate can rotate to an angle at least 14 degrees relative to the substrate; and wherein the adjacent mirror plates has a center-to-center distance from 4.38 to 10.16 micrometers; and wherein the hinge and the mirror plate is spaced apart from 0.5 to 1.5 micrometers.

233. (previously presented) The spatial light modulator of claim 218, further comprising:
an electrode proximate to each mirror plate for electrostatically deflecting the mirror plate.

234. (previously presented) The spatial light modulator of claim 218, wherein the substrate is glass or quartz that is visible light transmissive.

235 (previously presented) The spatial light modulator of claim 234, wherein the substrate comprises an anti-reflection film on a surface of the substrate.

236. (previously presented) The spatial light modulator of claim 234, wherein the substrate comprises a light absorption frame around an edge of the substrate.

237. cancelled

238. (previously presented) The spatial light modulator of claim 218, wherein each mirror plate rotate relative to the substrate in response to an electrostatic field.

239. (previously presented) The spatial light modulator of claim 218, further comprising:
a first electrode that drives the mirror plate rotate in a first rotation direction relative to the substrate; and
a second electrode that drives the mirror plate rotate in a second rotation direction opposite to the first rotation direction relative to the substrate.

240. (previously presented) The spatial light modulator of claim 239, wherein the first electrode and the second electrode are on the same side relative to the rotation axis of the mirror plate.

241. (previously presented) The spatial light modulator of claim 239 wherein the first electrode and the second electrode are on the opposite sides relative to the rotation axis of the mirror plate.

242. (previously presented) The spatial light modulator of claim 218, wherein the substrate is semiconductor.

243. (previously presented) The spatial light modulator of claim 218, wherein the gap between the adjacent mirror plates is from 0.15 to 0.25 micrometers.

244. (previously presented) The spatial light modulator of claim 218, wherein the gap between the adjacent mirror plates is from 0.25 to 0.5 micrometers.

245. (previously presented) The spatial light modulator of claim 218, wherein the gap between the adjacent mirror plates is 0.5 micrometers or less.

246. (previously presented) The spatial light modulator of claim 218, wherein the distance

between the hinge and the mirror plate is from 0.15 to 0.25 micrometers.

247. (previously presented) The spatial light modulator of claim 218, wherein the mirror plate is attached to a hinge such that the mirror plate rotates in a first direction to an angle from 15° degrees to 27° degrees relative to the substrate.

248. (previously presented) The spatial light modulator of claim 247, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

249. (previously presented) The spatial light modulator of claim 218, wherein the mirror plate is attached to a hinge such that the mirror plate rotates in a first direction to an angle from 17.5° degrees to 22.5° degrees relative to the substrate.

250. (previously presented) The spatial light modulator of claim 249, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

251. (previously presented) The spatial light modulator of claim 218, wherein the mirror plate is attached to a hinge such that the mirror plate rotates in a first direction to an angle around 20° degrees relative to the substrate.

252. (previously presented) The spatial light modulator of claim 251, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

253. (previously presented) The spatial light modulator of claim 218, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a first direction to an angle around 30° degrees relative to the substrate.

254. (previously presented) The spatial light modulator of claim 253, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

255. (previously presented) The spatial light modulator of claim 220, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a first rotation direction to an angle from 12° degrees to 20° degrees relative to the substrate.

256. (previously presented) The spatial light modulator of claim 255, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

257. (previously presented) The spatial light modulator of claim 219, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a first rotation direction to an angle from 12° degrees to 20° degrees relative to the substrate.

258. (previously presented) The spatial light modulator of claim 257, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

259. (previously presented) The spatial light modulator of claim 220, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a first rotation direction to an angle from 12° degrees to 20° degrees relative to the substrate; and wherein the hinge and the mirror plate is spaced apart from 0.5 to 1.5 micrometers.

260. (previously presented) The spatial light modulator of claim 259, wherein the mirror plate is attached to the hinge such that the mirror plate rotates in a second direction to an angle from 2° degrees to 9° degrees relative to the substrate.

261. (previously presented) The spatial light modulator of claim 218, wherein each mirror plate is held on the substrate via a hinge that is separated from the respective mirror plate by a gap.

262. (previously presented) The spatial light modulator of claim 218, wherein the gap between the mirror plate and hinge is from 0.15 to 1.5 micrometers.

263 (previously presented) The spatial light modulator of claim 262, wherein the gap between the mirror plate and hinge is from 0.15 to 0.45 micrometers.

264. (previously presented) The spatial light modulator of claim 262, wherein the gap between the mirror plate and hinge is from 0.5 to 1.5 micrometers.

265. (previously presented) A projection system, comprising:
a light source;
the spatial light modulator of claim 218;
a first lens for directing light from the light source onto the spatial light modulator; and
a second lens for directing light reflected from the spatial light modulator onto a display target.

266 (previously presented) The system of claim 265, wherein the light source is an arc lamp having an effective arc length around 1.0 millimeter.

267. (previously presented) The system of claim 265, wherein the light source is an arc lamp having an effective arc length less than 1.0 millimeter.

268. (previously presented) The system of claim 265, wherein the light source is an arc lamp having an effective arc length around 0.7 millimeter.

ATTORNEY DOCKET NUMBER P92-US

269 (previously presented) The system of claim 265, further comprising:

a video signal input that inputs a plurality of video signals, based on which the mirror plates of the spatial light modulator selectively reflects light such that the reflected light from the mirror plates forms a plurality of videos on the display target.